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10/069,781	02/28/2002	Andre Tardy	Q68616	5035

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EXAMINER	
KNAUSS, SCOTT A	
ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,781	TARDY ET AL.	
	Examiner	Art Unit	
	Scott A Knauss	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7 and 11* is/are rejected.

7)☒ Claim(s) *6 and 8-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The references cited in the information disclosure statement have been considered.

Claim Objections

2. Claims 2,3,5,6 and 8-11 are objected to because of the following informalities. Appropriate correction is required.

Regarding claims 2,3 and 9, the language "for example" is objected to, because it is not clear whether or not the limitations following "for example" are part of the claimed invention.

Regarding claim 6 the limitation "the bars" is objected to because it lacks proper antecedent basis in the claims. The examiner recommends using the language "the rods"

Regarding claims 8 and 10, the language "such as" is objected to, because it is not clear whether or not the limitations following "such as" are part of the claimed invention. In addition "the atmosphere in claims 8 and 10 lacks proper antecedent basis in the claims, as does "the volume" in claim 10.

Regarding claims 11, the limitations "the second cladding" lacks proper antecedent basis in the claims.

Regarding claims 5 and 8-11, independent claim 5 uses the transitional phrase "consists in" (line 26) and dependent claims 8-11 add additional limitations to claim 5. However, MPEP 2111.03 states that "the transitional phrase 'consisting of' excludes any

element, step, or ingredient not specified in the claim." Thus claims 8-11 would be improper, since they add additional steps to claim 5. The examiner recommends replacing "consists in" with "includes" or "comprises" to alleviate the objection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by 6,157,763 (Grubb et al).

Regarding claim 1, Grubb discloses in fig. 7 an optical fiber which is pumped through the cladding (see col. 6, ln. 56-58) comprising:

a core #20 having an optical index

a first cladding #72, having an index lower than that of the core (see col. 2, ln. 64-65)

a second cladding #74, around the first cladding, having a lower index than that of the first cladding (col 2, ln. 65-67)

the interface between the first and second claddings having a polygonal cross section (see fig. 7)

5. Claims 1 and 3 are rejected under 35 U.S.C. 102(a) as being anticipated by US 6,031,849 (Ball et al).

Regarding claim 1 Ball discloses in fig. 3 an optical fiber, which is pumped through the cladding (see abstract) comprising:

A core #32

A first cladding #34

A second cladding #36, the interface between the first and second claddings having a polygonal (rectangular) cross section.

Ball also discloses in col. 6, lines 29-34 that the core has an index n1=1.477, the first cladding an index n2 = 1.473, and the second cladding having an index n3=1.470, thus n1>n2>n3.

Regarding claim 3, Ball discloses the core being strongly doped silica (col. 7, lines 21-25), the first cladding being germanium doped silica (col. 7, lines 12-21) and that the outer cladding may be standard (undoped) silica (col. 7, lines 7-10)

6. Claims 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by 5,907,652 (DiGiovanni et al).

Regarding claim 5, DiGiovanni discloses, in figs 2 and 3, a method of fabricating a fiber pumped through its cladding (see abstract) comprising:

A central preform, having a core #11, surrounded by a first cladding #12 having a lower refractive index

A plurality of rods (tubes #21) having a refractive index lower than the inner cladding (i.e. the air in the tubes) placed around the central preform

drawing the central preform and the rods (col. 5, ln. 62-64) to obtain a fiber with two claddings (see resulting fiber in fig. 3, #12,#31,#32)

Regarding claim 7, after drawing the fiber, the fiber is a cladding pumped fiber (see abstract) having a refractive index profile shown in fig. 8, including a core #71, a first cladding #72 having a lower refractive index than the core, and a second cladding #83 having a lower refractive index than the first cladding.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,483,973 (Mazzarese et al).

Regarding claim 1, Mazzarese discloses in figs. 4a-b an optical fiber, pumped through it's cladding (see col. 2, ln. 45-47), the fiber comprising:

a core #20 having an optical index

a first cladding #40, having an index

a second cladding #60, around the first cladding, having a lower index than that of the first cladding (col 7, ln. 44-46)

the interface between the first and second claddings having a polygonal cross section (see figs. 4a-b)

Mazzarese does not, however, explicitly state that the first cladding #40 has an index less than that of the core. Nevertheless, it is well known in double clad type fibers to provide a first cladding having lower refractive index than that of the core for the purpose of confining optical signals propagating in the fiber to the core region. Therefore it would have been obvious to one of ordinary skill in the art to provide a first cladding region having lower index than that of the core for the purpose of confining optical signals to the core region.

Regarding claim 2, Mazzarese discloses:

A core of doped silica glass (col. 6, ln. 29-34)

A first cladding, which may be silica glass (col. 6, ln. 63 64), which is substantially pure (col. 6, ln. 51-52), or having only certain doped regions (see fig. 5) and thus can be considered to be either undoped or weakly doped.

A second cladding which may be borosilicate or fluorinated silica glass (see col. 7, ln. 50-52), and is thus doped negatively to reduce its refractive index (col. 7, ln. 46-50)

10. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,073,465 (Oleskevich et al).

Regarding claim 1, Oleskevich discloses in fig. 6 an optical fiber, which may be cladding pumped (see col. 5, lines 43-47) comprising:

A core #10

A first cladding #12

A second cladding #14, the interface between the first and second claddings having a polygonal cross section

Oleskevich also discloses that the fiber is formed in much the same way as the embodiment of fig. 1 (col. 5, lines 36-38), in which the first cladding #12 has an index less than that of the core (col. 3, lines 46-47), and the second cladding has an index less than the first cladding (col. 3, lines 62-63)

Regarding claim 4, Oleskevich discloses the use of an outer jacket #15 around the second cladding, and the interface between the second cladding and the jacket having a polygonal cross section (see fig. 6)

Oleskevich does not, however, specify the use of a low-index polymer coating around the second cladding.

Nevertheless, it is well known in the art to jacket optical fibers using such low-index polymer coatings. Such coatings are desirable for the purpose of protecting and strengthening an optical fiber.

Therefore it would have been obvious to one of ordinary skill in the art to substitute known outer jackets, particularly coatings composed of low-index polymers, for the purpose of strengthening and protecting the optical fiber of Oleskevich.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al.

Regarding claim 11, DiGiovanni discloses in fig. 8 and col. 4, ln. 58-63 the use of an outer polymer coating #85 which can be considered to envelope second cladding #83, but does not specify a low index polymer coating.

Nevertheless, DiGiovanni states that the polymer coating does not have any effect on the optical properties of the fiber (col. 4, ln. 58-59), and thus the refractive index of the coating could have any value, including what can be considered to be a "low" index. Since such coatings are well known in the art, it would have been obvious to one of ordinary skill in the art to substitute known polymer coatings, including low index polymer coatings, for the purpose of protecting the fiber of DiGiovanni.

Allowable Subject Matter

12. Claims 6 and 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if rewritten to alleviate the objections set forth at the beginning of the office action.

Regarding claim 6, none of the prior art references teach or suggest a method as set forth in claim 5, further comprising optical preforms with claddings having an index n3 (lower than the index of the first cladding) are used as bars placed around the central optical preform.

Regarding claims 8 and 9, the prior art fails to teach or suggest the central preform and the rods of claim 5 being placed in a sleeve within which the atmosphere is controlled for drawing by establishing a vacuum or partial pressure of gases or reagents.

Regarding claim 10 the prior art fails to teach or suggest the central preform and the rods of claim 5, wherein the interstices between the rods are filled, and the atmosphere in the volume delimited by the rods is controlled for drawing by establishing a vacuum or partial pressure of gases or reagents.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 2003/0031444 (Croteau et al) and 2002/0172486 (Fermann) are not prior art due to their later filing date, but are considered particularly relevant to the present application.

US 5,519,801 (Le Noane et al) discloses in fig. 10 forming a multicore guide having a central fiber with a polygonal cross section, as does US 6,098,044 (Hardy et al).

US 5,533,163 (Muendel) and 5,949,941 (DiGiovanni), cited in the international search report, disclose other fiber structures particularly relevant to the present application.

US 6,415,079 (Burdge et al) discloses in figs. 3 and 4 a fiber formed by drawing a preform surrounded by tubes.

US 4,838,916 (Edahiro et al) discloses in fig. 7 drawing a preform surrounded by rods to form a polarization preserving fiber.

US 4,709,987 (Blackburn et al) discloses in fig. 5 drawing a preform surrounded by a plurality of rods to form an optical fiber.

US 6,243,522 (Allan et al) discloses drawing a preform formed of a core surrounded by plurality of clad rods #12.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Knauss whose telephone number is (703) 305-5043. The examiner can normally be reached on 9-6 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308 - 4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Scott Knauss

Art Unit 2874

sak
April 22, 2003

HEMANG SANGHAVI
PRIMARY EXAMINER